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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,696	10/07/2003	Junichi Sato	1035-474	3574

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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
MERCEDES, DISMERY E	
ART UNIT	**PAPER NUMBER**
2627	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,696	SATO ET AL.	
	Examiner	Art Unit	
	Dismery E. Mercedes	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-6,13-18,25,26,29,30,33,34,37 and 38* is/are allowed.

6)☒ Claim(s) *7-12,19-24,27,28,31,32,35,36,39 and 40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 7-12,27-28,31-32,35-36 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 7-9,19-21,27,31,35,39 are rejected as being unpatentable over Tsukuda et al. (US 2002/0060979 A1) in view of Saiki et al. (US 6,183,892), further in view of Tanaka et al. (6,303,205).

As to Claim 7, Tsukuda et al. discloses a recording layer, and subsequent layers provided on the recording layer (as depicted in Figs.1,6,11-13) wherein the recording layer has bumps on a surface thereof, and bumps (land/groove structures) propagated through to the surfaces of the subsequent lavers are provided with a shape different to that of the bumps on the surface of the magnetic layer (as depicted in figs.1, 6,11-13). Tsukuda fails to particularly disclose a magnetic layer made of amorphous magnetic material. However, Saiki et al. discloses an opto-magnetic recording medium having an opto-magnetic layer made of amorphous magnetic material (i.e. TbFe, TbFeCo-see col.9, lines 7-20). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the optical layers as disclosed by Tsukuda et al. with the amorphous opto-magnetic layer as disclosed by Saiki et al., the motivation being to provide guide grooves for

servo tracking and the use of amorphous magnetic material is well known and appreciated in the art to provide disk with saturation magnetization and reduce the film thickness of the medium. Tsukuda et al. fails to specifically disclose height of the bumps on a surface of the magnetic layer is not less than 2% with respect to an average layer thickness of the magnetic layer. However, Tanaka et al. discloses such on (col.15, line 4 and col.16, lines 6-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the parameters as taught by Tanaka et al., the motivation being because it would provide the magnetic recording medium of Nakajima with the enhanced capability of obtaining good floating stability of the head, as well as good sliding durability performance (col.20, lines 51-55 of Tanaka et al.).

As to Claim 8, Saiki et al. further discloses wherein the bumps are formed by providing an underlayer, made of nonmagnetic metal element between the substrate and the magnetic layer (col.7, lines 40-45)

As to Claim 9, Saiki et al further discloses wherein the nonmagnetic metal element is aluminum (col.7, lines 40-45).

As to Claim 19-21, 27,31,35,39 have limitations similar to those treated in claim 7-9, and are met by the references as discussed above.

3. Claims 10,11,12,22-24,28,32,36,40 are rejected under 35 U.S.C. 103(a) as being unpatentable Tsukuda et al. (US 2002/0060979 A1) in view of Saiki et al. (US 6,183,892), further in view of Tanaka et al., further in view of view of Song et al. (US 6,472,049).

As to Claim 10, the combination Tsukuda et al., Saiki et al. and Tanaka et al. discloses the magnetic recording medium of claim 7, but fail to particularly disclose s wherein a magnetic compensation temperature thereof is not less than 25 degrees Celsius. However, Song et al. discloses

such (col.4, lines 30-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention, to modify the medium as disclosed by Chen et al. and Tsukuda et al. by implementing the teachings as disclosed by Song et al.., the motivation being to provide the magnetic recording medium of Sato et al. with the enhanced capability of increasing the coercivity of the magnetic recording medium to obtain higher density (col.4, lines 1-11 of Song et al.).

As to Claim 11, Tsukuda et al. further discloses magnetic layer is to magnetically record the information by receiving heat and a magnetic field that are applied ([0073],[1125]).

As to Claim 12, Song et al. further discloses the underlayer has bumps (grooves) on the surface, a compound constituting an element of amorphous magnetic material and nonmagnetic metal (col.4, line 10).

4. As to Claims 22-24,28,32,36,40 have limitations similar to those treated in the rejection of claims 10-12 and are met by the references as discussed above.

Allowable Subject Matter

5. Claims 1-6,13-18,25-26,29-30,33-34,37-38 allowed.

Independent Claims 1,13,25,29,33,37 are allowable over the prior art of record since the cited references taken alone or in combination do not teach or suggest: *"wherein the magnetic layer has bumps on a surface thereof and density of the bumps is not less than 400 bumps/μm^2, and wherein at least five of the bumps are included in a single magnetic bit."*

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dismery E. Mercedes whose telephone number is 571-272-7558. The examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne R. Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DM

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER